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(54) Title: **MATERIALS AND METHODS FOR FORMING HYBRID ORGANIC-INORGANIC DIELECTRIC MATERIALS**

(57) Abstract: The present invention generally relates to methods for making dielectrics for integrated circuit processes and devices. More particularly, the invention relates to multi-level circuit processes, such as damascene processes that utilize metal and metal alloys (e.g., copper and copper alloys) as well as low-k dielectric materials. The methods of the present invention allow for greater control of the dielectric fabrication process.

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## INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C07F C08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

CHEM ABS Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 21924 A (QUESTER TECHNOLOGY, INC., USA) 6 May 1999 (1999-05-06) the whole document	1-131
X	VAKS, E. A. ET AL: "Radiochemical synthesis of dichlorotrifluorophenyl and dichloro(trifluoromethyl)phenyl derivatives of silicon" ZHURNAL OBSHCHEI KHIMII (1977), 47(4), 782-5, 1977, XP002243352 Table I	1-28, 32-76, 78-129, 131

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- \*&\* document member of the same patent family

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>VAKS, E. A. ET AL: "Radiation-chemical synthesis of polyfluoroaromatic derivatives of silicon affected by accelerated electrons"</p> <p>ZHURNAL OBSHCHEI KHIMII (1975), 45(6), 1315-22 ,</p> <p>1975, XP002243353</p> <p>Table I</p>	<p>1-28,</p> <p>32-76,</p> <p>78-129,</p> <p>131</p>
X	<p>-----</p> <p>DATABASE CA 'Online!</p> <p>CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US;</p> <p>ROMASHKIN, I. V. ET AL: "Synthesis of fluoroorganosilicon compounds containing a phenylene bridge"</p> <p>retrieved from STN</p> <p>Database accession no. 78:84483 CA</p> <p>XP002243354</p> <p>abstract</p> <p>&amp; ZHURNAL OBSHCHEI KHIMII (1972), 42(11), 2490-4 ,</p> <p>1972,</p>	<p>1-28,</p> <p>32-76,</p> <p>78-129,</p> <p>131</p>
X	<p>-----</p> <p>DATABASE CA 'Online!</p> <p>CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US;</p> <p>ROSCHER, C. ET AL: "Perfluoroaryl substituted inorganic-organic hybrid materials"</p> <p>retrieved from STN</p> <p>Database accession no. 125:336678 CA</p> <p>XP002243355</p> <p>abstract</p> <p>&amp; MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS (1996), 435(BETTER CERAMICS THROUGH CHEMISTRY VII: ORGANIC/INORGANIC HYBRID MATERIALS), 547-552 ,</p> <p>1996,</p>	<p>1-28,</p> <p>32-76,</p> <p>78-129,</p> <p>131</p>
X	<p>-----</p> <p>FROHN, H.-J. ET AL: "Reactions of methyl(pentafluorophenyl)- and methyl(pentafluorophenyl)phenylsilanes with electrophiles. A convenient preparative route to halo(methyl)pentafluorophenylsilanes C<sub>6</sub>F<sub>5</sub>SiMe<sub>2</sub>X and C<sub>6</sub>F<sub>5</sub>SiMeX<sub>2</sub> (X = F, Cl and Br)"</p> <p>JOURNAL OF ORGANOMETALLIC CHEMISTRY (1998), 570(2), 255-263 ,</p> <p>1998, XP004142856</p> <p>the whole document</p> <p>-----</p>	<p>1-28,</p> <p>32-76,</p> <p>78-129,</p> <p>131</p>

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FROHN, H. J. ET AL: "A convenient preparation of pentafluorophenyl(fluoro)silanes: reactivity of pentafluorophenyltrifluorosilane" JOURNAL OF ORGANOMETALLIC CHEMISTRY (1996), 506(1-2), 155-64 , 1996, XP004092795 the whole document ---	1-28, 32-76, 78-129, 131
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